



CDC Information on ***Burkholderia pseudomallei***

Burkholderia pseudomallei

Melioidosis, also called Whitmore's disease, is an infectious disease that can infect humans or animals. The disease is caused by the bacterium *Burkholderia pseudomallei*. Melioidosis is diagnosed by isolating *Burkholderia pseudomallei* from blood, urine, sputum, skin lesions, or abscesses; or by detecting an antibody response to the bacteria. It is predominately a disease of tropical climates, especially in Southeast Asia and northern Australia where it is widespread. The bacteria causing melioidosis are found in contaminated water and soil. It is spread to humans and animals through direct contact with the contaminated source.

Transmission

People can get Melioidosis through direct contact with contaminated soil and surface waters. Humans and animals are believed to acquire the infection by inhalation of contaminated dust or water droplets, ingestion of contaminated water, and contact with contaminated soil, especially through skin abrasions.

It is very rare for people to get the disease from another person. While a few cases have been documented, contaminated soil and surface water remain the primary way in which people become infected. Besides humans, many animal species are susceptible to melioidosis, including: sheep, goats, swine, horses, cats, dogs, cattle.

Infection Classifications

Melioidosis can be categorized as an acute or localized infection, acute pulmonary infection, acute bloodstream infection, or disseminated infection. Sub-clinical infections are also possible. The incubation period (time between exposure and appearance of clinical symptoms) is not clearly defined, but may range from one day to many years; generally symptoms appear two to four weeks after exposure. Although healthy people may get melioidosis, the major risk factors are diabetes, liver disease, renal disease, thalassemia, cancer or another immune-suppressing condition not related to HIV.

- **Localized infection-** This form generally presents as an ulcer, nodule, or skin abscess and may result from inoculation through a break in the skin and may produce fever and general muscle aches. The infection may remain localized, or may progress rapidly through the bloodstream.
- **Pulmonary infection-** This is the most common form of presentation of the disease and can produce a clinical picture of mild bronchitis to severe pneumonia. The onset of pulmonary melioidosis typically is marked by a high fever, headache, anorexia, and general muscle soreness. Chest pain is common, but a nonproductive or productive cough with normal sputum is the hallmark of this form of melioidosis. Cavitory lesions may be seen on chest X-ray, similar to those seen in pulmonary tuberculosis.
- **Bloodstream infection-** Patients with underlying risk factors such as diabetes and renal insufficiency are more likely to develop this form of the disease, which usually results in septic

shock. The symptoms of bloodstream infection may include fever, headache, respiratory distress, abdominal discomfort, joint pain, muscle tenderness, and disorientation. This is typically an infection with rapid onset, and abscesses may be found throughout the body, most notably in the liver, spleen, or prostate.

- **Disseminated infection-** Disseminated melioidosis presents with abscess formation in various organs of the body, and may or may not be associated with sepsis. Organs involved typically include the liver, lung, spleen, and prostate; involvement of joints, bones, viscera, lymph nodes, skin, or brain may also occur. Disseminated infection may be seen in acute or chronic melioidosis. Signs and symptoms, in addition to fever, may include weight loss, stomach or chest pain, muscle or joint pain, and headache or seizure.

Signs and Symptoms

There are several types of melioidosis infection, each with their own set of symptoms.

However, it is important to note that melioidosis has a wide range of signs and symptoms that can be mistaken for other diseases such as tuberculosis or more common forms of pneumonia.

- **Localized Infection:** Localized pain or swelling, fever, ulceration, abscess
- **Pulmonary Infection:** Cough, chest pain, high fever, headache, anorexia
- **Bloodstream Infection:** Fever, headache, respiratory distress, abdominal discomfort, joint pain, muscle tenderness, disorientation
- **Disseminated Infection:** Fever, weight loss, stomach or chest pain, muscle or joint pain, headache, seizures

The time between an exposure to the bacteria that causes the disease and the emergence of symptoms is not clearly defined, but may range from one day to many years; generally symptoms appear two to four weeks after exposure.

Treatment

When a melioidosis infection is diagnosed, the disease can be treated with the use of appropriate medication.

The type of infection and the course of treatment will impact long-term outcome. Treatment generally starts with intravenous (within a vein) antimicrobial therapy for 10-14 days, followed by 3-6 months of oral antimicrobial therapy.

Prevention

- Persons with open skin wounds and those with diabetes or chronic renal disease are at increased risk for melioidosis and should avoid contact with soil and standing water.
- Those who perform outdoor field work should wear boots, which can prevent infection through the feet and lower legs.
- Workers must use standard contact precautions (mask, gloves, and gown) and proper work practices to help prevent infection.